MED into GRAD
Scholars Program

Integrating Medicine into Basic Science Research
THE PROBLEM:

Explosive growth in biological knowledge, resulting from the development of molecular genetics and modern cell biology, has made it increasingly difficult for the biomedical community to incorporate new information into medical practice. New fields of study, such as genomics and proteomics, have created fresh opportunities for understanding medically relevant biology.

While our understanding of the biology of humans and their pathogens has grown, too little of that knowledge has been applied to the treatment of disease.

THE SOLUTION:

The OSU HHMI MED into GRAD Scholars Program was established to augment the biomedical applications of traditional basic science research programs at The Ohio State University. Combining elements of OSU’s Independent Study Program (ISP) in the College of Medicine, Graduate School, and Center for Clinical and Translational Science (CCTS), the MED into GRAD Scholars Program will further the training of exceptional precandidacy graduate students whose dissertation research is relevant to one of the program’s six areas of emphasis in the basic sciences:

1. Biomedical Engineering
2. Computational Biology
3. Genetics
4. Infectious Disease
5. Neuroscience
6. RNA Biology

This additional training will prepare MED into GRAD scholars to facilitate the sharing of information between basic scientists and clinicians. It will also increase their understanding of the language, culture, and practice of medicine, and help them develop the skills needed to form future partnerships and collaborations with physician scientists.

www.hhmi.org
THE CURRICULUM:

Training will begin at the end of the first year of graduate study, after students have completed the core basic science curriculum of their graduate program and have chosen a dissertation advisor, committee and area of research. The OSU HHMI MED into GRAD Scholars Program will overlay three major curricular components to this foundation:

1. **The Preclinical Medical Curriculum:** MED into GRAD scholars will study preclinical independent study program (ISP) modules in the areas of Histology, General Pathobiology, and select modules from the Med-1 and Med-2 curricula in the organ system that relates most closely to their dissertation research problem. Content within each module is interdisciplinary and organized mainly by organ systems. Modules first focus on the normal human and then on pathobiology, and include detailed, highly structured learning objectives, resource guides, reading, Web-and computer-based materials, diagnostic practice sessions and self-assessments.

2. **The Translational Research Experience:** Each scholar will participate in courses that provide exposure to:
   
a. The experimental design, methods and approaches used to solve problems in translational research

b. The administrative requirements, available resources, and critical analysis of translational research

c. The regulatory and ethical principles involved in patient centered research.

3. **The Clinical Mentorship:** Scholars receive preparation for exposure to inpatient hospital wards and outpatient clinical environments through an Introduction to Clinical Medicine course. A clinical mentor will be selected for each scholar based on the relevancy of their clinical practice to the scholar’s research project. The clinical mentor will meet with the scholar and plan 12 clinical experiences that best relate to their dissertation research. The mentorship experience is designed to help scholars gain a better understanding of the language, culture, and practice of medicine. These experiences will introduce scholars to the potential application of their research to clinical medicine and enhance their preparedness to form collaborations and partnerships with clinical scientists.

“I found my time spent in the pathology lab extremely eye-opening. My mentor made sure to relate what we were seeing on the slides back to my research, by explaining how the different disease presentations might affect the readings on the device I am designing to detect cancer.”

*Emily Sequin*
Sample Course of Study: An individualized curriculum is created for each MED into GRAD scholar based on their research area of emphasis. The curriculum is comprised of seminars, Independent Study Program (ISP) modules, courses from the Signature Program Translational Science Curriculum (SP TS curriculum) and mentored clinical experiences.

Sample Quarter:
- MED into GRAD Orientation
- ISP module related to dissertation research
- SP TS Curriculum
- Translational Seminar
- Mentored Clinical Experience
- Independent Research

SCHOLAR BENEFITS:

A. One-year stipend support of $30,000.
B. One-year of tuition expenses (exclusive of general fees).
C. Individualized preclinical and translational science curriculum.
D. Access to resources in the OSU Center for Clinical and Translational Sciences.
E. College of Medicine faculty member appointed to dissertation committee.
F. Mentored clinical experiences.
G. Scientific networking with faculty, other research trainees and administrators in the College of Medicine.
H. Acquisition of the knowledge and skills necessary to facilitate the translation of new biological knowledge into therapeutics or tools that will improve human health.

OSU is one of 23 institutions funded by the Howard Hughes Medical Institute to establish training programs which are designed to expedite the translation of basic discoveries to clinical application.
THE APPLICATION PROCESS

The OSU HHMI MED into GRAD Scholars Program is offered annually to six exceptional precandidacy graduate students. Interested applicants should prepare the following:

• Two-page research proposal, which should include:
  1. Title
  2. Explanation of the relevance of the applicant’s dissertation research to one or more of the six basic science emphasis areas of the MED into GRAD Program:
  3. Hypothesis
  4. Specific Aims
  5. Research Plan
     a. Background and Significance
     b. Preliminary data (optional)
     c. Experimental plan
 • Applicant’s Biographical Sketch (see form page and sample on website)

• Applicant’s Personal Statement, describing career aspirations and motivation for applying to the OSU HHMI MED into GRAD Scholars Program. Describe any program expectations and interest in particular didactics or clinical experiences (no more than one page).

• Research Advisor Biographical Sketch or curriculum vitae, including past and current grant support

• Letters of Support from:
  ◦ Research Advisor, addressing scientific potential and training plan of the applicant
  ◦ Graduate Program Director, evaluating the applicant’s performance—checklist/form
  ◦ Any additional research mentors (optional)

Complete application materials, including deadlines, can be found online: medicine.osu.edu/go/hhmi

“It was exhilarating to talk about APC and inherited colorectal cancer conditions with a clinician, and to be able to ask questions openly and receive valuable feedback so easily.”
- William Hankey
THE HOWARD HUGHES MEDICAL INSTITUTE (HHMI)

Discovering New Knowledge:

HHMI is a nonprofit medical research organization that engages in the direct conduct of research in the basic life sciences. The Institute has a vibrant grants program and ranks as one of the nation’s largest philanthropies, playing a powerful role in advancing biomedical research and science education in the United States. The Institute’s research expenditures totaled $730 million in fiscal year 2009, and it distributed $101 million in grant support for science education.

The Institute’s charter states, “The primary purpose and objective of the Howard Hughes Medical Institute shall be the promotion of human knowledge within the field of the basic sciences (principally the field of medical research and medical education) and the effective application thereof for the benefit of mankind."

We live in an era of discovery. Each day, scientists bring us closer to understanding fundamental questions about human life. How does the brain process information and store knowledge? How do mutations in key genes cause disease? How do cells communicate? The challenge of solving these and other questions – as well as the promise of what those answers might yield – drives the quest for knowledge at the heart of the work at the Howard Hughes Medical Institute.

Website: www.hhmi.org

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OHIO STATE UNIVERSITY FUNDING PARTNERS

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College of Engineering
College of Veterinary Medicine

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Ohio State University College of Medicine

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